MATH 111: Calculus I
Fall 2015 Course Syllabus

NJIT Academic Integrity Code: All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description: Topics include limits, continuity, differentiation, optimization, approximation, and integration. Applications are drawn from engineering, physics, biology, economics, and design. Effective From: Fall 2014.

Number of Credits: 4

Prerequisites: Math 110 with a grade of C or better or by placement.

Course-Section and Instructors

Course-Section	Instructor
Math 111-001	Professor N. Tsipenyuk
Math 111-003	Professor R. Goodman
Math 111-005	Professor C. Diekman
Math 111-007	Professor B. Froese
Math 111-009	Professor M. Michal
Math 111-011	Professor M. Michal
Math 111-013	Professor J. Hayes
Math 111-015	Professor J. Zaleski
Math 111-017	Professor J. Zaleski
Math 111-019	Professor P. Ward
Math 111-021	Professor R. Bouayad
Math 111-101	Professor J. Hayes
Math 111-103	Professor B. Patiak
Math 111-105	Professor O. Varfolomiyev

Required Textbook:

Title	*Thomas' Calculus: Early Transcendentals*
Author	Thomas
Edition	13th
Publisher	Pearson
ISBN #	978-0321981677
Notes	w/ MyMathLab
Website	MyMathLab - Course Compass

University-wide Withdrawal Date: Please note that the last day to withdraw with a W is November 2, 2015. It will be strictly enforced.

COURSE GOALS

Course Objectives

- Students should (a) learn about limits and their central role in calculus, (b) learn about derivatives and their relationship to instantaneous rates of change, (c) understand many practical applications of derivatives, (d) gain experience in the use of approximation in studying mathematical and scientific problems, (e) learn about integrals: their origin in the area problem and their relationship to derivatives.
- Students should gain an appreciation for the importance of calculus in scientific, engineering, computer, and other applications.
- Students should gain experience in the use of technology to facilitate visualization and problem solving.

Course Outcomes

- Students have improved logical thinking and problem-solving skills.
- Students have a greater understanding of the importance of calculus in science and technology.
- Students are prepared for further study in mathematics as well as science, engineering, computing, and other areas.

Course Assessment: The assessment of objectives is achieved through homeworks, quizzes, and common examinations with common grading.

POLICIES

DMS Course Policies: All DMS students must familiarize themselves with, and adhere to, the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. DMS takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Homework, Quizzes, and Matlab	15%
Common Midterm Exam I	15%
Common Midterm Exam II	20%
Common Midterm Exam III	20%
Final Exam	30%

Your final letter grade will be based on the following tentative curve. **NOTE**: This course needs to be passed with a grade of C or better in order to proceed to subsequent courses such as MATH 112.

A	88 - 100	C	65 - 71
B+	83 - 87	D	60 - 64
B	77 - 82	F	0 - 59
C+	72 - 76		

Attendance Policy: Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the Math Department's Attendance Policy. This policy will be strictly enforced. Day sections of Math 111 meet four times a week; there are three lectures and one recitation. Recitation classes provide an additional opportunity for you to seek help with homework and concepts taught in class.

Homework Policy: Calculus is learned by solving problems. In Math 111, there are two kinds of homework assignments: 1) assignments which are written out by hand and turned in, and 2) assignments which are completed online. The homework assignments are listed on the syllabus; the * superscript denotes those problems which constitute the hand-in assignments while the remaining problems constitute the online assignments.

The online assignments can be completed at WWW.MYMATHLAB.COM or WWW.COURSECOMPASS.COM . In order access the online assignments you need to have a student access code. Access codes are included with new book that is bundled with MyMathLab; codes can be purchased separately from the textbook at the campus bookstore or online at the course website. If you buy a new book from another source **make sure it is bundled with MyMathLab**. In addition, on the first day of class your course instructor will give you an additional code needed to access the online assignments. **NOTE: Homework Assignments are DUE frequently (at least weekly) at the dates and times specified online and by your instructor**.

How to Get Started with MyMathLab:

- Getting Started
- Technology Tips

MATLAB Assignments: MATLAB is a mathematical software program that is used throughout the science and engineering curricula. Two MATLAB assignments will be given during the semester; tutors are available to help students having difficulties in accordance with a posted schedule.

Quiz Policy: Quizzes are given in class on a frequent basis (at least weekly). All of the quizzes will be graded. The homework and quizzes are intended to develop your problem-solving skills and to help you prepare for the exams.

Exams: There will be three midterm exams held during the semester and one comprehensive final exam. Exams are held on the following days:

Common Exam I	September 30, 2015
Common Exam II	October 21, 2015
Common Exam III	November 18, 2015
Final Exam Week	December 15 - 21, 2015

The time of the midterm exams is **4:15-5:40 PM** for daytime students and **5:45-7:10 PM** for evening students. The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the Math Department's Examination Policy. This policy will be strictly enforced.

Makeup Exam Policy: To properly report their absence during a midterm or final exam, please review the required steps under the DMS Examination Policy found here:

- http://math.njit.edu/students/policies_exam.php

Mandatory Tutoring Policy: Based upon academic performance indicating a significant gap in understanding of the course material, students may receive a notice of being assigned to mandatory tutoring to assist in filling the gap. A student will have 2 points deducted from the course average for each instance in which the required tutoring is not completed by the stated deadline.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times.

ADDITIONAL RESOURCES

Math Tutoring Center: Located in Cullimore, Room 214 (See: Fall 2015 Hours)

Accommodation of Disabilities: NJIT is committed to providing students with documented disabilities equal access to programs and activities. If you have, or believe that you may have, a physical, medical, psychological, or learning disability that may require accommodations, please contact the Coordinator of Student Disability Services located in the Center for Counseling and Psychological Services, in Campbell Hall, Room 205, (973) 596-3414. Further information on disability services related to the self-identification, documentation and accommodation processes can be found on the webpage at:

- http://www.njit.edu/counseling/services/disabilities.php

Important Dates (See: Fall 2015 Academic Calendar, Registrar)

Date	Day	Event
September 1, 2015	T	First Day of Classes
September 7, 2015	M	Labor Day - University Closed
September 8, 2015	T	**Monday Classes Meet**
September 8, 2015	T	Last Day to Add/Drop Classes
November 2, 2015	M	Last Day to Withdraw
November 25, 2015	W	**Friday Classes Meet**
November 26 - 29, 2015	R - Su	Thanksgiving Recess - University Closed
December 10, 2015	R	Last Day of Classes
December 11 & 14, 2015	F & M	Reading Days
December 15 - 21, 2015	T - M	Final Exam Period

Course Outline

Week Dates	Section # + Topic		Lecture # + HW Assignment		
1 9/1 - 9/4	2.1:	Rates of Change and Tangents to Curves	1	p.64:	1,3*,5,9,13,21
	2.2:	Limit of a Function and Limit Laws	2	p.74:	1,13,19,22,25,31,32*,33,35,41,47, 49,50*, 53,57,63,79,80*,81
2 9/8 - 9/11	2.4:	One-Sided Limits	3	p.91:	3,5,9,13,15,17,25,27,29,30*,32*,35,39,45*

	»	MATLAB 1		»	DUE ON 9/21/15
	2.5:	Continuity	4	p.102:	3,5,7,15,17,18*,20*,21,25,27,29,30*
	2.5, 2.6:	Continuity (cont.) and Limits Involving Infinity; Asymptotes of Graphs	5	p.102:	33,35,37,38*,39,41,43,47,53,54*,55*,59
SEPTEMBER 8, 2015 (T): CLASSES FOLLOW A MONDAY SCHEDULE					
3 9/14 – 9/18	2.6:	Limits Involving Infinity; Asymptotes of Graphs (cont.)	6	p.115:	7,9,11,23,25,27,30*,31,33,43, 45,49,53,61,63,67,82*,86*,99,103*
	3.1:	Tangents and the Derivative at a Point	7	p.126:	11,13,15,17,21,34*,35
	3.2:	The Derivative as a Function	8	p.133:	1,3,5,13,26,32*,33,39,41,46*,56*
4 9/21 – 9/25	3.3:	Differentiation Rules	9	p.144:	5,7,19,25,31,38*,39,40*,41,43,45
	3.3:	Differentiation Rules (cont.)	10	p.144:	47,52*,53,55,57,60*,62,63,65,70*,72
	3.4:	The Derivative as a Rate of Change	11	p.153:	1,5,7,10,13,17,18*,22*,23,25,31
5 9/28 – 10/2	»	REVIEW FOR EXAM I ~ 9/30/2015	12	»	STUDY FOR EXAM I
COMMON EXAM 1: WEDNESDAY, SEPTEMBER 30,2015					
	3.5:	Derivatives of Trigonometric Functions	13	p.160:	2,12,15,16,19,26,29,33,35,44*,49,53,59,61
	»	GO OVER EXAM 1			
	3.6:	The Chain Rule	14	p.168:	3,5,17,23,25,29,33,35,39,43,46*,47,49, 50*,51,61,62*,63,65,66*,67
6 10/5 – 10/9	3.6, 3.7:	The Chain Rule (cont.) and Implicit Differentiation	15	p.168:	71,77,79,81,83,86*,88*,89,95,99
	3.7, 3.8:	Implicit Differentiation (cont.) and Derivatives of Inverse Functions and Logarithms	16	p.175:	1,7,11,15,16,17,19,23,26*,31,37,38*,39
	3.8:	Derivatives of Inverse Functions and Logarithms (cont.)	17	p.185:	7,9,13,21,24,29,31,35,36*,39,43,56*,61, 63,65,69,74*,83,89,92*,95
7 10/12 – 10/16	3.9:	Inverse Trigonometric Functions	18	p.192:	5,11,21,23,31,33,34,36*,37,41,42*,61
	3.10:	Related Rates	19	p.198:	7,11,15,17,21,23,25,26*
	3.10, 3.11:	Related Rates (cont.) and Linearization and Differentials	20	p.198:	27,31,32*,33,37,40,41,42*
8 10/19 – 10/23	»	REVIEW FOR EXAM II ~ 10/21/2015	21	»	STUDY FOR EXAM II
COMMON EXAM 2: WEDNESDAY, OCTOBER 21, 2015					
	3.11, 4.1:	Linearization and Differentials (cont.) and Extreme Values of Functions	22	p.211:	5,11,13,18*,19,31,35,41,51,53,54*,59
	»	GO OVER EXAM 2			
	4.1:	Extreme Values of Functions (cont.)	23	p.228:	7,25,29,33,35,39,41,47,49,51,61,63,65,

					67,69,71,72*,86
9 10/26 – 10/30	4.2:	The Mean Value Theorem	24	p.237:	3,4,5,6,11,13,16,21,24*
	4.2, 4.3:	The Mean Value Theorem (cont.) and Monotone Functions and the First Derivative Test	25	p.237:	31,35,37,41,45,47,49,51,56,63*
	4.3, 4.4:	Monotone Functions and the First Derivative Test (cont.) and Concavity and Curve Sketching	26	p.242:	11,13,21,29,36*,37,40*,41,43,49,61,71,73
10 11/2 - 11/6	\»	NOVEMBER 2, 2015 (M): LAST DAY TO WITHDRAW FROM THIS COURSE			
	4.4:	Concavity and Curve Sketching (cont.)	27	p.252:	7,13,19,25,28,31,35,39,43,45,49,52*,58*,90*,94*,99,111,121
	4.5:	Indeterminate Forms and L'Hopital's Rule	28	p.262:	7,9,11,15,19,21,23,29,33,37,40*,41,44,46,48*,49
	4.5, 4.6:	Indeterminate Forms and L'Hopital's Rule (cont.) Applied Optimization	29	p.262:	51,55,57,58,60*,63,65,67,71,79,82*
11 11/9 – 11/13	4.6:	Applied Optimization (cont.)	30	p.270:	4,7,9,11,12,14,23,24*,30*,31,38,39,51,56
	\»	MATLAB 2		\»	DUE ON 11/20/15
	4.7:	Newton's Method	31	p.279:	1,2,5,6*,12*,19
	4.8:	Antiderivatives	32	p.287:	5,11,19,35,37,39,41,45,47,54*,59,61,64*,69,97,101,104,107,113,122*,123
12 11/16 – 11/20	\»	REVIEW FOR EXAM III ~ 11/18/2015	33	\»	STUDY FOR EXAM III
		COMMON EXAM 3: WEDNESDAY, NOVEMBER 18, 2015			
	5.1:	Area and Estimating with Finite Sums	34	p.307:	1,5,7*,8,9,11
	\»	GO OVER EXAM 3			
	5.2:	Sigma Notation and Limits of Finite Sums	35	p.315:	7,9,17,25,29,33,38,39,40*,43,46* **AND MATLAB 2 IS DUE**
13 11/23 – 11/25	5.3:	The Definite Integral	36	p.324:	1,9,13,21,22,28*,33,42,45
	5.3, 5.4	The Definite Integral (cont.) and The Fundamental Theorem of Calculus	37	p.324:	57,59,61,71,73*,74*,79,88
		NOVEMBER 25, 2015 (W): CLASSES FOLLOW A FRIDAY SCHEDULE			
		NOVEMBER 26 - 27 (R & F): THANKSGIVING - NO CLASSES SCHEDULED			
14 11/30 – 12/4	5.4:	The Fundamental Theorem of Calculus (cont.)	38	p.336:	7,9,13,15,16*,21,23,27,30,41,47,50*,53,55,57,60,61,63,64*,75,77
	5.5:	Indefinite Integrals and the Substitution Method	39	p.345:	11,15,18,20,21,23,25,26,27,29,32*,33,36*

	5.5, 5.6	Indefinite Integrals and the Substitution Method (cont.) and Substitution and Area Between Curves	40	p.345:	37,38*,43,46*,47,52*,53,55,56*,59,63,65,79
15 12/7 – 12/10	5.6:	Substitution and Area Between Curves (cont.)	41	p.353:	3,11,17,19,24*,27,29,33,39,51,64,69,72*, 75,81,85,88*,91,95,96*,97,100,113
	»	**REVIEW FOR FINAL EXAM**	42	»	**STUDY FOR FINAL EXAM**
FINALS	**FINAL EXAM WEEK: DECEMBER 15 - 21,2015**				

Updated by Professor D. Horntrop - 9/15/2015